

REMARKS

Reconsideration and allowance of this application are respectfully requested in view of the amendments above and the remarks below.

In the Specification

In the Office Action, it was suggested that the reference number listed for the “outlet” as “106” should be “104” in paragraph 14, line 3. Accordingly, Paragraph [0014] has been amended as suggested by the Examiner.

35 U.S.C. §102 Rejections

In the first Office Action, claims 1-3, 5 and 6 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Clement (U.S. Patent No. 229,094).

Briefly summarized, applicant’s invention is directed to a ball check valve comprising a housing having walls defining a fluid inlet, a fluid outlet and a chamber communicating with the inlet and with the outlet. The ball check valve includes a spherical hollow ball in the chamber having a diametric cross-sectional area larger than the area of the inlet. A plurality of shock absorbing members is contained within the spherical hollow ball. By this amendment, independent claim 1 requires the ball to be movable between a first, flow impeding position adjacent the inlet along a guide part to a second position spaced from the inlet and diverged from the fluid passageway to allow fluid to pass through the valve. Support for this amendment can be found in paragraph [0014] in the Specification.

Applicant recognized that the use of a spherical hollow ball filled with a plurality of spherical shock absorbing members reduces the physical shock and hydrodynamic forces from the flow of fluid subjected to the ball during closing or high velocity flow in a ball check valve. The noise caused by hydraulic shock waves and damage to the interior using a solid spherical ball

in a ball check valve are also reduced by using a spherical hollow ball filled with a plurality of spherical shock absorbing members in accordance with the principles of the present invention.

Clements (U.S. Patent No. 229,094) discloses a completely different valve than the check valve constructed according to the principles of the present invention. Specifically, Clements discloses a relief valve consisting of an open trap or valve for safety pipes using a ball of rubber weighted by inserting shot or other heavy particles through an air-hole. (lines 45-47). The ball is retained upon its seat normally by its weight and closes or traps the end of the pipe so that air may not enter. (lines 50-52). The valve is designed to pop open when the water reaches a certain height in the pipe (a). Contrary to the indication in the Office Action, the shot or other heavy particles disclosed in Clements are not disclosed as “shock absorbing members” and there is no discussion or suggestion that this shot “stabilize” the spherical hollow ball during operation in the trap. Clements fails to disclose or suggest that a ball weighted with shot is capable of reducing noise, physical shock forces or damage to the interior of the check valve in a closed, turbulent valve environment. Further, Clements fails to disclose or suggest a guide part to move the ball from a first position to a second position. Instead, the ball is permitted to move anywhere in the cage of wire (b) used to retain the ball once the valve pops open.

When asserting a §102 rejection, it is well established that there is no anticipation unless (1) all the same elements are (2) found in exactly the same situation and (3) are united in the same way to (4) perform the identical function.

Amended independent claim 1 now recites that the spherical ball is movable between a first, flow impeding position adjacent the inlet along a guide part to a second position spaced from the inlet and diverged from the fluid passageway to allow fluid to pass through the valve.

As this feature is not found in Clements, Clements does not anticipate applicant's invention as now recited in amended independent claim 1.

It is respectfully submitted that the above anticipation rejections of claims 1-3, 5 and 6 are now overcome and withdrawal of this grounds for rejection and allowance of these claims are respectfully requested.

35 U.S.C. §103 Rejections

In the Office Action, claim 4 was rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Clements in view of Watanabe et al. (U.S. Patent No. 6,267,137). However, Watanabe does not cure the deficiencies of Clements.

Watanabe (U.S. Patent No. 6,267,137) discloses a closed ball check valve using a ball having a metallic solid sphere closely encompassed with a coat of rubber or synthetic resin. (Col. 5, lines 5-6). Watanabe fails to disclose or suggest a spherical hollow ball containing a plurality of spherical shock absorbing members as required by claim 1.

The ball utilized in Watanabe moves in a turnout path under its own weight along a guide part as a result of the flow of fluid in the check valve. Watanabe fails to recognize the need for an alternative ball design to reduce noise, physical shock forces or damage to the interior of the check valve. There is no suggestion, motivation or disclosure in either Clements or Watanabe to replace the solid ball disclosed in Watanabe with the ball used in Clements to reduce noise, physical shock forces or damage to the interior of a check valve because both references simply disclose the use of their respective balls to close a trap or valve by the weight of the ball. In other words, both balls, as disclosed in their respective references, perform the same function based strictly on weight alone and, therefore, there is no reason for one skilled in the art to replace the ball disclosed in Watanabe with the ball disclosed in Clements when both are taught

to do the same thing. As discussed above, there is no disclosure or suggestion that the shot inserted in the hollow ball disclosed in Clements is capable of reducing noise, physical shock forces or damage to the interior of the check valve in a closed, turbulent valve environment.

It is respectfully submitted that the above obviousness rejections of claim 4 is now overcome and withdrawal of this grounds for rejection and allowance of the claims are respectfully requested.

CONCLUSION

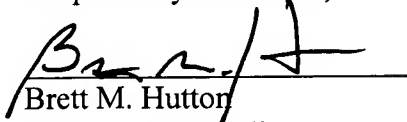
For all of the above reasons, it is respectfully submitted that independent claim 1 is patentable over the applied prior art. The dependent claims are believed allowable for the same reasons noted above in connection with independent claims from which they directly or ultimately depend, as well as for their own additional features.

It is believed that the application is in condition for allowance, and such action is respectfully requested.

If a telephone conference would be of assistance in advancing the prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone him at the number provided.

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Respectfully submitted,


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